

Claims:

1. A coupled enzymatic reaction system comprising an NADH-dependent enzymatic transformation of an organic compound with an alcohol dehydrogenase and an enzymatic regeneration of the NADH with the formate dehydrogenase derived from *Candida boidinii* or mutants thereof in a two-phase solvent system, wherein an aqueous phase is in contact with a liquid organic phase.
- 10 2. Reaction system according to Claim 1, characterised in that the organic solvent employed possesses a solubility in water that is as low as possible and a solubility in respect of the organic compounds employed that is as high as possible.
- 15 3. Reaction system according to Claim 1 and/or 2, characterised in that aromatic or aliphatic hydrocarbons that are liquid under the reaction conditions, in particular those having a logP value of > 3, are employed as organic solvent.
- 20 4. Reaction system according to Claim 1, 2 and/or 3, characterised in that the organic solvent is present in a quantity amounting to 10 - 60 vol.% in relation to the total volume.
- 25 5. Reaction system according to one or more of the preceding claims, characterised in that the organic compound is present prior to the start of the reaction in a concentration of > 25 mM per L solvent mixture, in particular > 100 mM per L solvent mixture.

6. Reaction system according to one or more of the preceding claims,
characterised in that
the system contains no surfactants.
- 5 7. Reaction system according to one or more of the preceding claims,
characterised in that
an alcohol dehydrogenase derived from *Lactobacillus kefir* is employed as enzyme for the transformation of
10 the organic compound.
8. Reaction system according to one or more of Claims 1 to 6,
characterised in that
an alcohol dehydrogenase derived from *Rhodococcus erythropolis* is employed as enzyme for the
15 transformation of the organic compound.
9. A device for the transformation of organic compounds,
comprising a reaction system according to Claim 1.
10. A process for the enzymatic transformation of organic
20 compounds by application of the reaction system
according to Claim 1.
11. Use of the reaction system according to Claim 1 for
the enzymatic transformation of organic compounds or
for the diagnosis or analysis of, preferably,
25 alcohols.
12. Use according to Claim 11 in a process for preparing
enantiomer-enriched organic compounds, preferably
alcohols.